ACCESSIBLE TRANSPORTATION TECHNOLOGIES RESEARCH INITIATIVE

U.S. Department of Transportation
Federal Transit Administration

U.S. Department of Transportation
Federal Highway Administration

U.S. Department of Transportation
Office of the Assistant Secretary for Research and Technology

Accessible Transportation Technologies Research Initiative (ATTRI)

Persons with Disabilities

Veterans with Disabilities

Older Adults

- A U.S. DOT Multi-Year, Multimodal, Multi-Agency Research and Development Effort
- Identifying user needs of travelers with disabilities to develop new transformative applications to increase personal mobility
- Building collaborative research and deployment partnerships with other US and International research communities, both public and private
- Unique opportunity to develop and deploy novel applications for accessible transportation and extend those benefits to all travelers

Challenges and Opportunities

- 76% people with disabilities say adequate transportation is important to their job search
- 29% consider it a significant problem in accessing jobs [1]

Targeted Populations

- Persons with Disabilities
- Veterans with Disabilities
- Older Adults

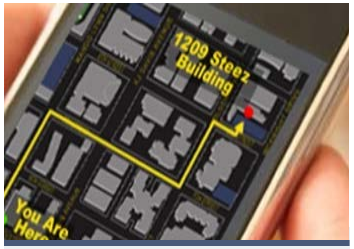
Types of Disabilities

- Vision
- Mobility
- Hearing
- Cognitive

Enabling Technologies

- ITS, Wireless & Sensors
- Connected Vehicles
- Automated Vehicles/ Personal Mobility
- Robotics, Artificial Intelligence
- Accessible Data

ATTRI Technology Research Areas



Wayfinding & Navigation Solutions

- Indoor/Outdoor navigation & orientation Apps
- Situational awareness and text recognition devices

Enhanced Human Services Transportation

- Real-time multimodal trip planning & services
- Inclusive one-fare payment application for all travelers
- Paratransit to Fixed-route

Data Integration

- Accessibility data and information systems
- Interoperability and data needs

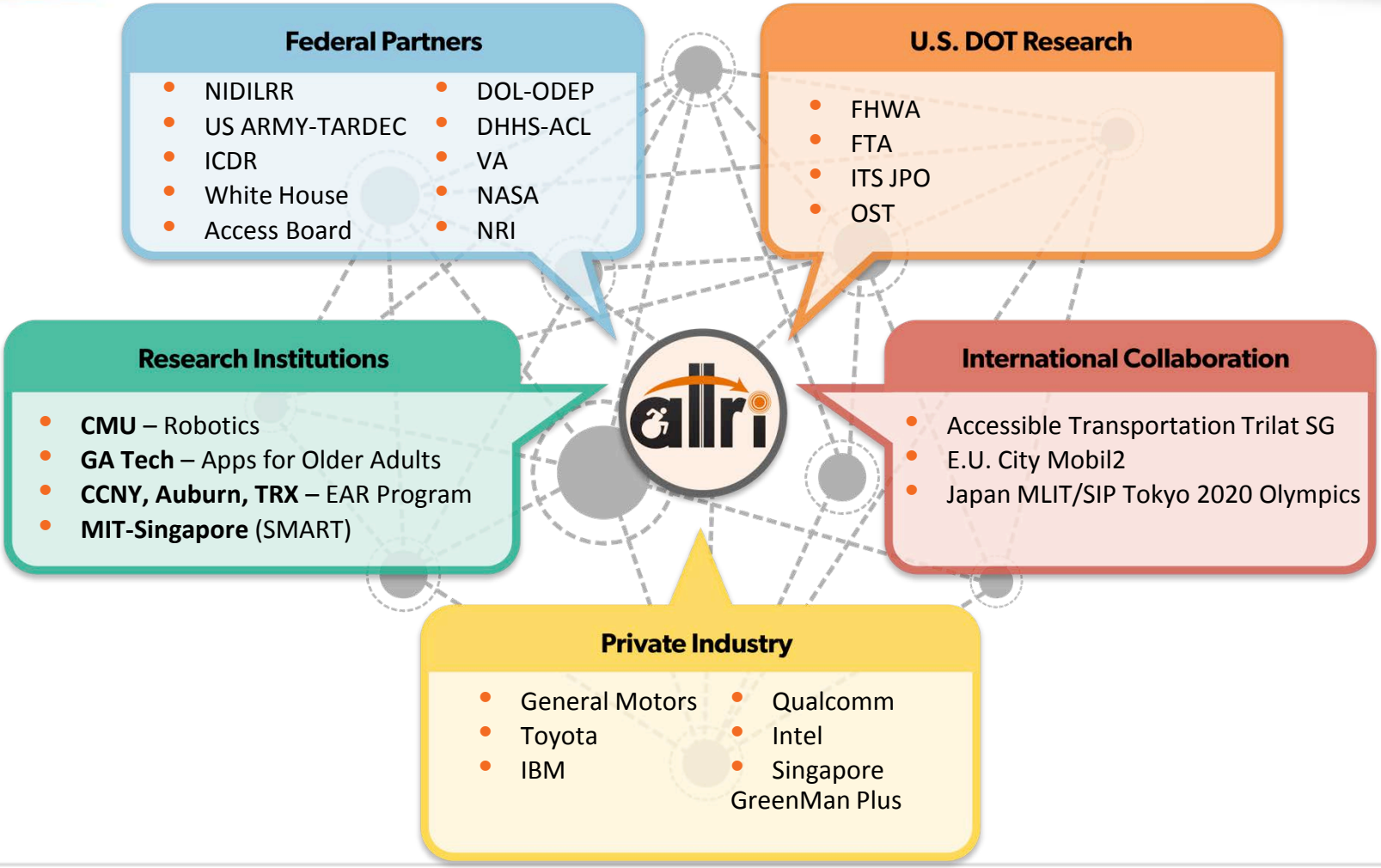
ITS & Assistive Technologies

- Travel and emergency announcements with captioning and haptic/flashing alerts
- V2V, V2I and V2P apps for pedestrians

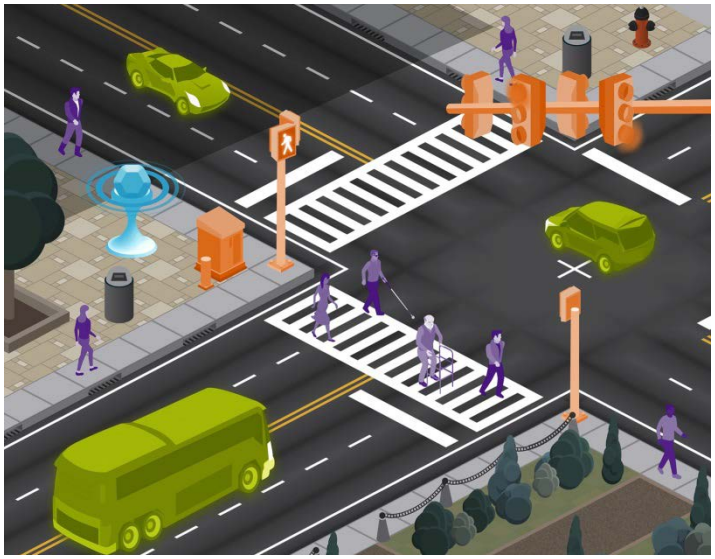
Automation & Robotics

- Personal mobility vehicles for first/last mile connections
- Virtual caregivers/concierge services with machine vision/AI, V2X

Strong Partnerships



ATTRI Foundational Considerations



Standard Accessible Data Platform

- *Examples:* machine to machine, crowdsourced, archived and real time data, open data, user profiles, sensors, data standards, etc…

Universal Design Standards

- Multiple accessible communication formats and user interfaces

Integrated Payment

Leverage Existing Technologies

- Wearables, mobiles devices, in-vehicle displays, infrastructure, etc…

Application Workshop Polling Results

We asked: *Which application do you rank with the highest priority?*

1. 

Smart Wayfinding & Navigation Systems

2. 

Pre-Trip Concierge and Virtualization

3. 

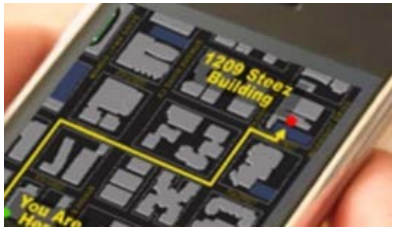
Shared Use, Automated Vehicle

4. 

Safe Intersection Crossing

Smart Wayfinding & Navigation

1.



- **Navigation Systems**
  - Smartphone-based navigation systems for indoor and outdoor use
  - Beacons or electronic tags to interact with the built environment
  - Multiple communication formats (visual, audible, haptic) including multiple languages
- **Wearable Technologies**
  - Wearable, discreet assistive navigation tools
  - Connect with assistive devices already in use (e.g. white cane)
- **Community Navigators**
  - Use community volunteers to provide data on their neighborhoods.

Pre-Trip Concierge & Virtualization

2.

- **Pre-Trip Concierge**
  - Provide pre-trip and in-route traveler information (crowd sourced)
  - Design for people with blindness, low vision, cognitive and mobility issues
- **Virtualization**
  - Passengers “see” their entire routes on an app with landmarks (to remove fear and facilitate independent mobility)
  - Virtual caregiver helps plan routes and track travelers movement

Shared Use, Automation & Robotics

3.

- **Robo-Ped** - Automated Robotic Characterization of Pedestrian Zones
  - Crowdsourced/Fleet, networked, real-time
  - Provides Market Intelligence
  - Smartphone / Mobile App
- **RoboScout** – Machine and robotic cross-walk assistant
  - Leverages existing ITS and V2I technologies
  - Safe and Connected
  - Link to fare media
- **RoboSAV** - Slow-speed Automated Vehicle Connectivity
  - Provides autonomous assistance to destination in constrained environment
  - Demand Responsive, Real-time, Ridesharing

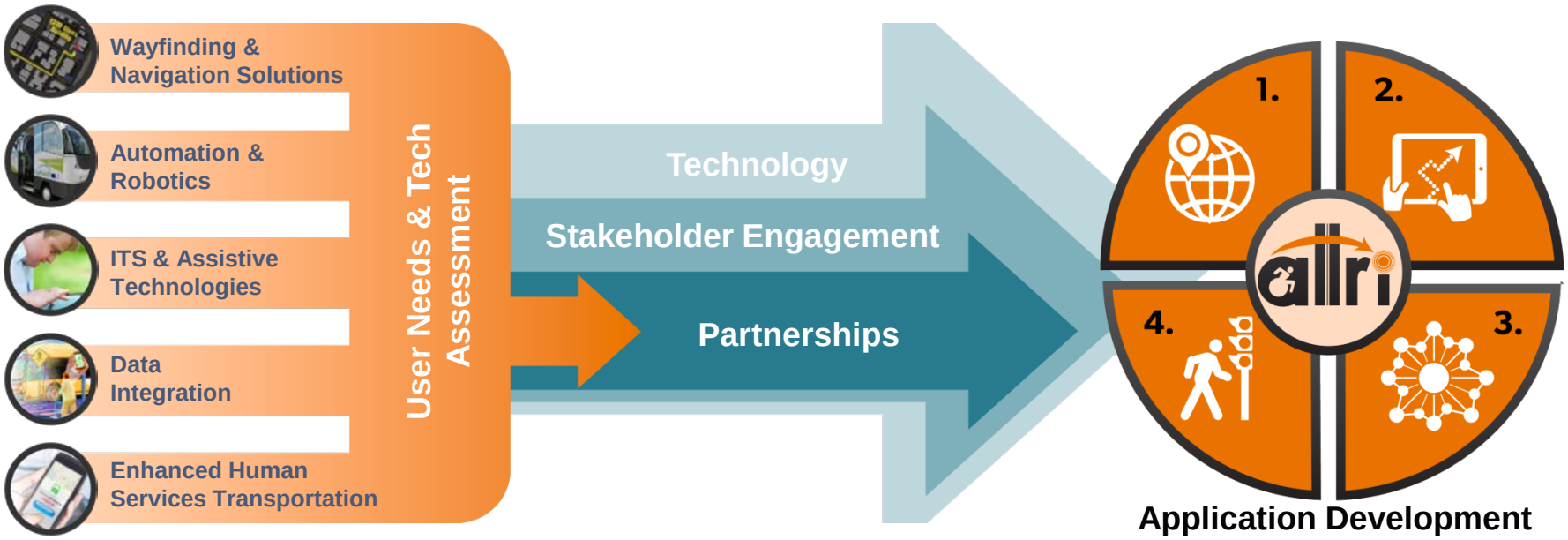
Safe Intersection Crossing

4.

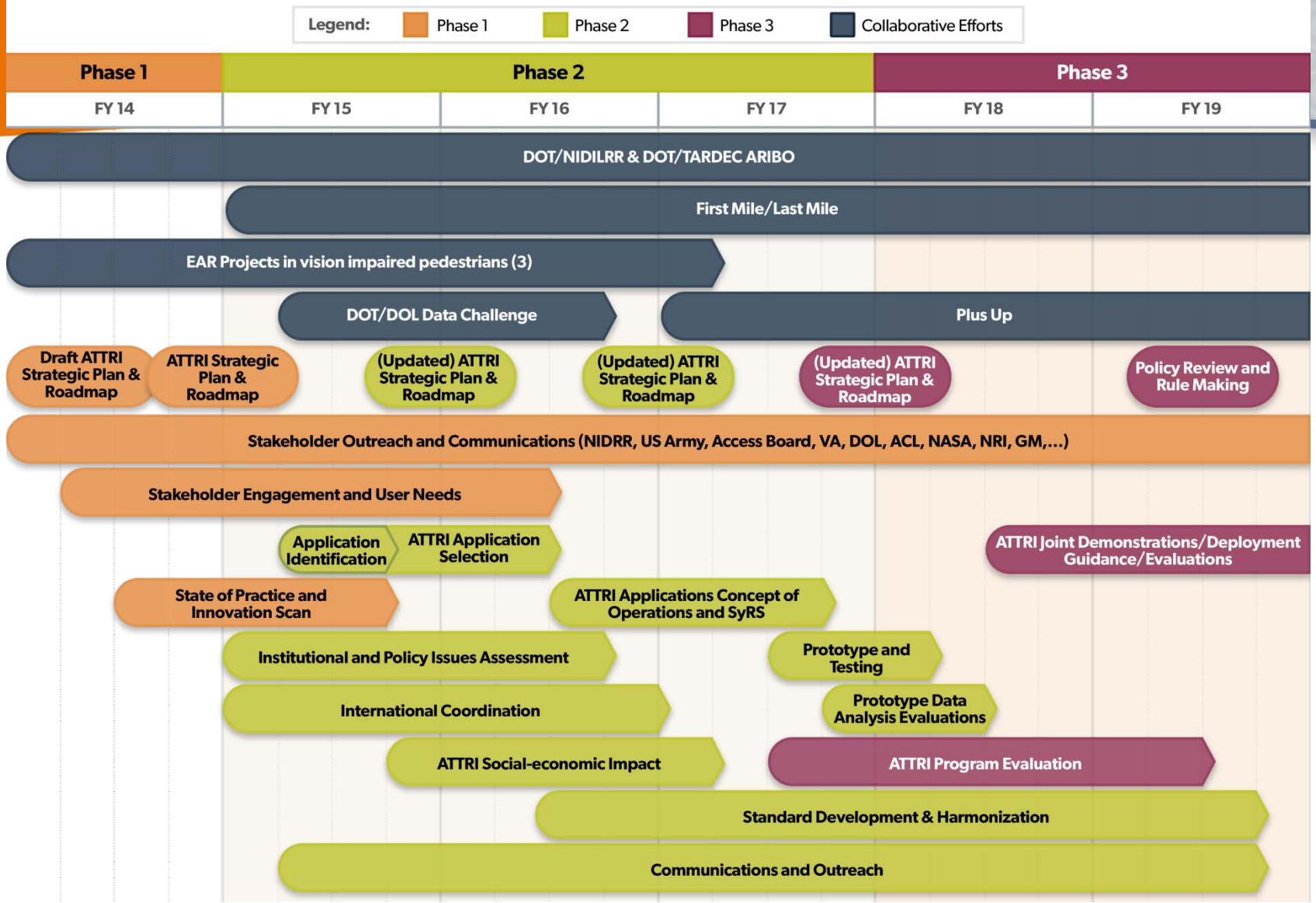
- **Safe Intersection**
  - Pedestrians interface with traffic signal and vehicles receive alerts
  - Automated intersection crossing assistance
  - Design for people with blindness, low vision, cognitive and mobility issues
  - Beacons or electronic tags to interact with the built environment
  - Multiple communication formats (visual, audible, haptic) including multiple languages

Application Development Needs Partnership

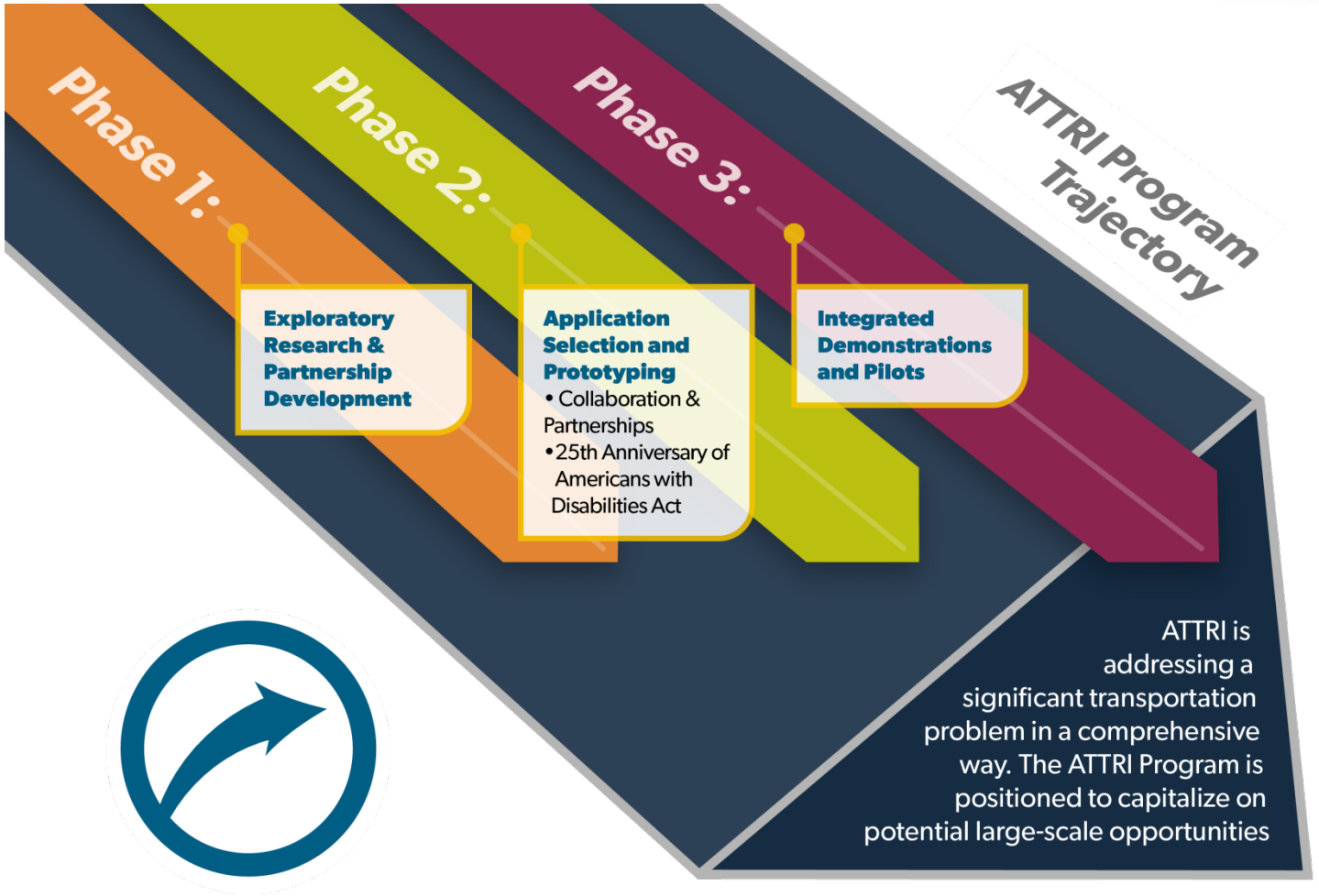
- Transportation is a complex challenge that affects all aspects of life, including health, education, recreation, and social and economic activities
- A need for multi-agency cooperation and coordination leveraging resources to address challenges in a comprehensive way
- ATTRI is expanding beyond a single-agency approach to help solve mobility challenges, partnerships are necessary!



Technical Support Services



ATTRI Program Trajectory



Thank You!

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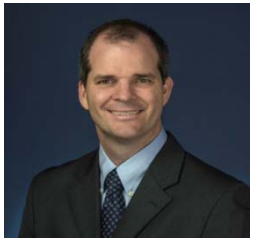

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